

# California Academy of Sciences' Member Newsletter

# Academy

June & July 2004

## An Army of Ants

### Academy scientists bring a biological treasure back from Trinidad

When the Academy decided to create a new natural history exhibit at 875 Howard Street that would feature live colonies of ants, Army ants were proposed as ideal participants. These amazing ants build nests out of their own bodies called bivouacs. They also hunt by forming fan-shaped swarms and devouring every animal in their path. However, obtaining these ants presented some significant obstacles. Army ants were not on display or held in captivity anywhere in the world, so Academy biologists could not simply borrow a colony from another institution. Instead, they would need to travel to one of the tropical habitats where Army ants live – either in Africa or South America – and capture a wild colony of ants. Then, they would have to find a way to keep the ants alive while transporting them back to San Francisco, clearing customs, and introducing them to a new “tropical” habitat at 875 Howard Street, complete with under-floor heating systems and humidifying sprinklers.



PHOTO: DONG LIN

Fisher and his team sucked over a million Army ants into large vacuum bags, which they then secured inside a wooden crate.

In late April, a team of Academy biologists overcame each of these obstacles when Brian Fisher, Ph.D. led an expedition to Trinidad to collect a colony of Army ants for the *ANTS: Hidden Worlds Revealed* exhibit. After



PHOTO: DONG LIN

Before they could collect the colony of Army ants that is now on display in the *ANTS* exhibit, Academy biologists Brian Fisher, Ph.D. and David Chan had to haul two heavy Shop-Vac vacuums through the rainforest of Trinidad.

walking for miles through rainforest habitat, Fisher and Academy biologist David Chan located a colony of these ferocious ants. Then, they tracked the colony for nine days to determine whether or not they would be able to transport the ants. Army ants enter a migratory phase each time their pupae hatch, since they must cover large areas to find enough food for the new hungry mouths. If the Academy team had tried to transport a colony that was in a migratory phase, the hungry ants would have started to eat one another during the flight back to San Francisco. Finally, on April 20, Fisher and Chan hauled two heavy Shop-Vac vacuums down a ravine and up through dense rainforest until they

reached the log where the chosen colony had formed its bivouac. After donning protective boots and gloves, they turned on their vacuums and sucked over a million Army ants into large vacuum bags, which they quickly sealed inside a wooden crate. Thus secured, the ants and their captors boarded a private plane that was donated for this purpose by a generous Academy supporter. After a stop in Puerto Rico, where a customs officer cleared what was no doubt one of the more unusual pieces of cargo that had come through on his watch, the crew arrived in San Francisco and carted their biological treasure over to 875 Howard Street.

The Army ants have now been in their new habitat for over a month, and they are healthy and eating well, consuming about 1,000 crickets a day. Make sure to visit their enclosure during your next trip to the Academy and watch these amazing ants at work.



PHOTO: DONG LIN

After an uneventful flight, the Army ants were unloaded into their new home at 875 Howard Street.

## Members Explore New Museum

Before the Academy opened for Preview Days on May 1, Academy members received a special invitation to take a sneak peek around the downtown facility on April 28 and 30. Over 2,500 members took their first tour of 875 Howard Street, and the security guards helped their first lost child – one dad was so fascinated by the *ANTS* exhibit that he forgot about his son, who apparently got tired of waiting and took off on his own. Here are some comments from Academy members:

- “I’m so excited! I’ve missed you guys!”
- “I forgot how lovely this neighborhood really is.”
- “I took the day off work to come. I was blown away!”
- “Fabulous layout. Well done. Look forward to many visits.”
- “Great location – I can ‘pop in’ during my lunch hour.”
- “Outstanding! If this is the prototype of the new museum, then it should be spectacular!”



PHOTO: DONG LIN

On Members' Preview Days, the Army ants were a big hit with audiences young and old.

### Join Us For Our Grand Opening on June 19!

Join the Welcoming Committee, meet Howard the Gi-ANT, and blow bubbles on your way to the Academy's new location at 875 Howard Street! There will be lots to do as the Academy celebrates its Grand Opening on June 19.

Find out more about upcoming activities on page 4.



# Message to Members

We've all gone back to school. And it's very exciting. The new facility at 875 Howard Street is much more than a temporary museum and aquarium; it is a learning laboratory. It is a place of education for both the public and the staff. Here we will not only be teaching and, we hope, inspiring, but also creating prototypes for the new Academy due to open in 2008 back in Golden Gate Park.

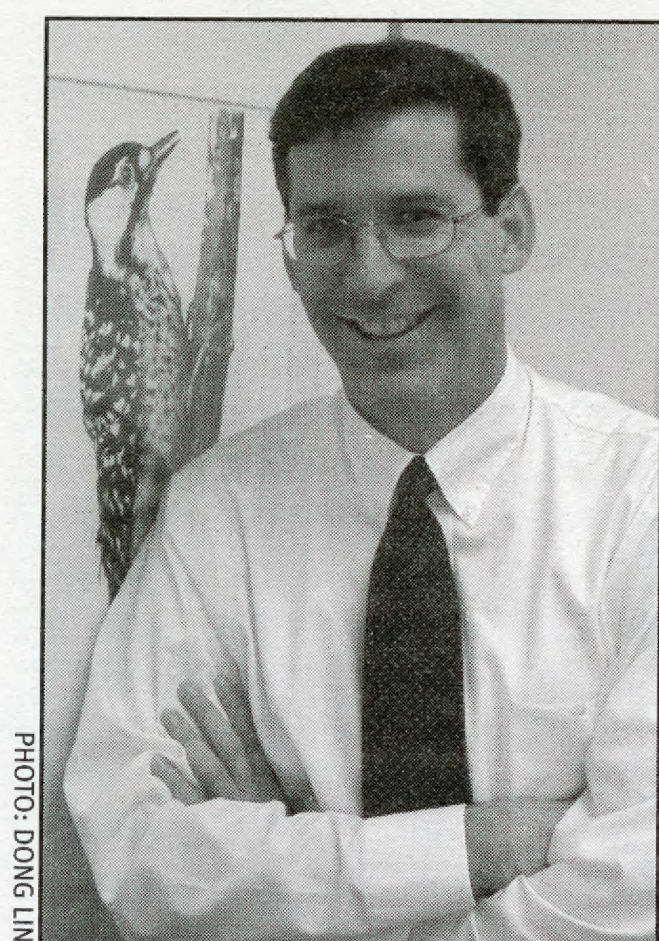


PHOTO: DONG LIN  
Patrick Kociolek, Ph.D.

First, we will experiment with new content. Our current exhibits of astrobiology and live ants are two excellent representative examples. The live ant exhibit shows ecosystems at work: the animals foraging for food, setting up nests, feeding their young, and living as they would in the wild. The astrobiology exhibit combines the Academy's expertise in outer space and extreme environments on Earth. If life exists outside our planet, it is in such places that it is most likely to survive. Our coral reef tank, slow to mature – that is the nature of coral – will teach us how we can create delicate habitats that accurately represent the natural world.

Second, we will prototype a much more transparent approach to the Academy. In the aquarium, we want to take advantage of our limited space to maximize the viewing

opportunities and show the public the mechanics of a working museum. There's no "behind the scenes" at Howard Street. The many activities to keeping a large aquarium facility operating – feeding, cleaning, monitoring the filtration systems and water quality – will take place in full view of the public. So will the gradual process of moving fish from the tanks back in the park and introducing them to their new homes downtown. By the end of July, we hope to have all of them moved. Throughout the facility, the public will be aware of the full breadth of the Academy's activities, including its research and educational programs, as well as the exhibitry.

Third, we will always be on the lookout for opportunities to educate in a stimulating setting. I urge you to visit our Naturalist Center, and innovative classroom. Bring your children and grandchildren. These imaginative quarters have already become a magnet for young kids (and it's full of books and videos that members can borrow). Our overriding goal is to get the Bay Area's children enthusiastic about science. Come and see for yourself.

– Patrick Kociolek,  
Executive Director

## Grow Cafe

### Nourishing Food, Nurturing Lives

Grow Cafe at 875 Howard Street is operated by Golden Gate Community, Inc. ([www.GGCI.org](http://www.GGCI.org)), a nonprofit agency that has been transforming the lives of at-risk youth for twenty-three years by offering employment, housing, and communities of support. Grow Cafe provides jobs, training, and mentoring for adolescents and young adults committed to breaking out of a cycle of homelessness, addiction, and poverty.

Located on the first floor of the Academy's downtown building, Grow Cafe offers tasty, quick breakfast and lunch options while also providing insights into food science and the reality behind growing a socially-responsible food supply. The menu was designed to exceed the taste and quality expectations of Academy visitors, while also meeting social mission and environmental sustainability goals.

To that end, local vendors have been carefully selected, including Acme's artisan bread; Niman Ranch meats; Diestel Farms turkey; Clover Stornetta's organic, hormone-free dairy products; Guittard chocolate; Full Bloom Baking Company sweets; and Jeremiah's Pick organic, fair trade coffee. The menu will include breakfast pastries and bagels, fresh fruit, oven toasted sandwiches, fresh grab-and-go sandwiches, salads, soups, snack plates, soft-serve ice cream with toppings, mini cakes and tarts, and beverages.

Grow Cafe is open every day from 10 am to 3 pm, and is available to cater children's birthday parties at the Academy.



PHOTO: DONG LIN

## Junior Academy

### Summer Explorations

For Ages 6–8

Discover some of nature's most amazing animals, living inside and right outside the Academy. Make crafts and have fun with hands-on activities. Drop-off and pick-up at the Academy at 875 Howard Street between 4th and 5th Streets.

#### Tidepool Creatures

Discover the wonders of tidepools on a visit to the Academy's new Touch Tidepool. Then, create your own ocean dweller. Pre-registration required for this class. **Monday, July 26, 8:30 am–noon; \$35 members, \$45 non-members**

#### Herptacular

Explore the amazing world of amphibians and reptiles. Examine preserved specimens with Academy scientists, and get a close-up look at live creatures on a visit to Steinhart Aquarium's new SSsssnake Alley. Then make a snake-skin rubbing to take home with you. Pre-registration required for this class.

**Tuesday, July 27, 8:30 am–noon  
\$35 members, \$45 non-members**

#### Arthropods Alive

Discover similarities and differences between arthropods, such as butterflies, lobsters, and spiders. Touch Madagascar hissing cockroaches and peer inside live ant nests in the *ANTS* exhibit. Then, go outside to search for other arthropods at nearby Yerba Buena Gardens. Pre-registration required for this class. **Wednesday, July 28, 8:30 am–noon  
\$35 members, \$45 non-members**

#### Birdmania

See what makes birds so special by examining their feathers and bones, and catch the Academy's African penguins in action using their wings to do something other than fly. Pick apart an owl pellet to discover what the nighttime bird swallowed for dinner. Pre-registration required for this class. **Thursday, July 29, 8:30 am–noon  
\$35 members, \$45 non-members**

PHOTO: DONG LIN

### Marine Biology Adventurers

For Ages 12–14



PHOTO: CAS EDUCATION STAFF

Explore Bodega Bay's ruggedly beautiful coastline during five exciting days. Watch lounging harbor seals and discover the many birds that make this marshy area their home. Study amazing tidepool creatures like sea stars and anemones. Hike along bluffs to identify and sketch the area's coastal plants. Canoe Petaluma

Marsh, the Bay Area's largest intact tidal marsh. Return amazed at the diversity of coastal California's plant and animal life. Dormitory-style housing and meals provided by UC Davis Bodega Marine Laboratory.

Campers will practice outdoor skills and field-biology techniques while studying California's amazing marine wildlife and plants. Drop-off and pick-up at the Academy at 875 Howard Street. All meals, except lunch on trip's first day, are included.

**Orientation: Friday, August 6, 5–7 pm  
Field Trip: August 9–13,  
Monday 8:30 am–Friday 5 pm  
\$510 members, \$560 non-members**

**i** For all Junior Academy offerings, please call (415) 321-8000, e-mail [edregistrar@calacademy.org](mailto:edregistrar@calacademy.org), or visit [www.calacademy.org/education](http://www.calacademy.org/education) for more information, including scholarship applications.

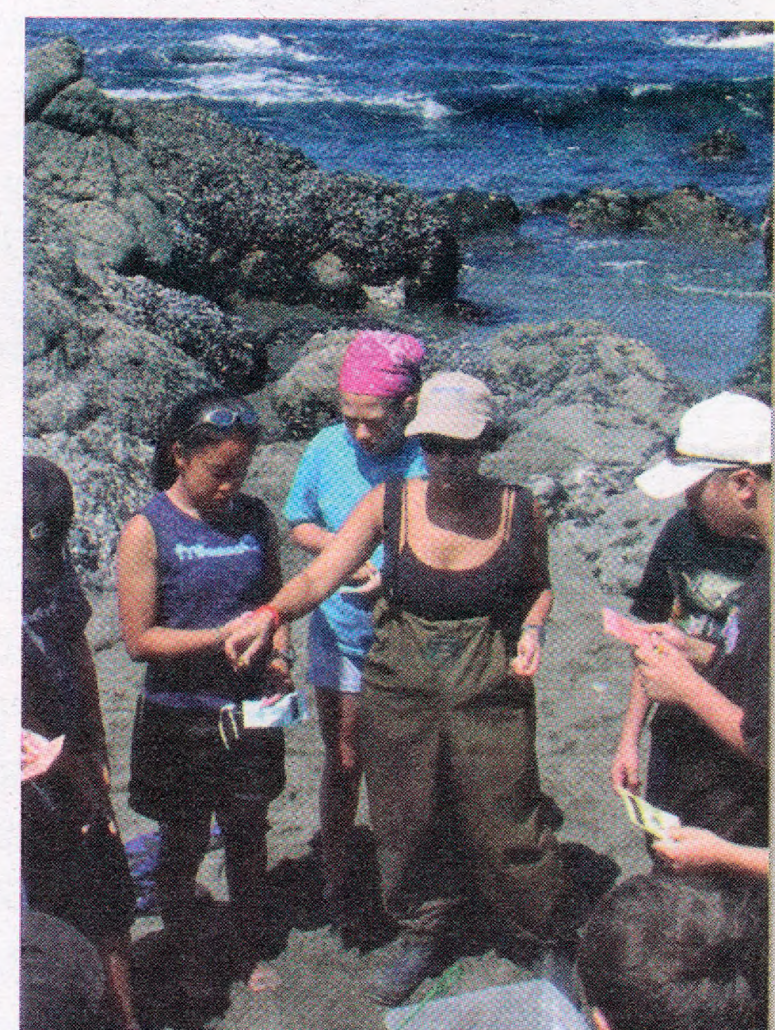


PHOTO: CAS EDUCATION STAFF



# Lectures

## Benjamin Dean Lecture Mars Exploration Rover Science

Joy Crisp, Ph.D., Mars Exploration Rover Project  
Scientist, NASA/JPL



Joy Crisp, Ph.D., NASA Scientist  
past environments on Mars were favorable for life.

This ambitious mission landed rovers at two different locations on Mars in January 2004 and features twin robots equipped as "field geologists" designed to look for evidence of past water activity and assess whether

**Monday, June 7, 7:30 pm**

**Jewish Community Center of San Francisco**

**\$3; Tickets can be purchased on page 4, by calling (415) 321-8000, or at the door, when available.**

## June Members' Lecture Acquiring the New Aquarium

Tom Tucker, Curator, Steinhart Aquarium,  
California Academy of Sciences

Join Tom Tucker of Steinhart Aquarium as he shares the trials and tribulations of moving the Academy's prized aquarium to its new location on Howard Street. Watch video and photographic documentation of this epic effort and hear tales behind some of the more challenging relocations, such as the sharks and alligators. Learn about the new exhibits at Howard Street, including the two-story coral reef and the water circulation demands of the new facility.

**Monday, June 14, 2 & 7:30 pm**

**Zeum Theater; Free to members,**

**\$4 Zeum members, \$8 non-members**

**Tickets can be purchased on page 4, by calling (415) 321-8000, or at the door, when available.**

**Jewish Community Center of San Francisco**  
3200 California Street at Presidio, San Francisco  
**Public Transportation**

The following MUNI bus lines stop directly in front: #1 California, #3 Jackson, #4 Sutter, #43 Masonic.

**Parking is available at the following locations:**

- Beneath the JCCSF in the building's garage.
- The UCSF Laurel Heights campus parking lot, accessible from Walnut and California Streets.

**Zeum Theater**

221 4th Street at Howard, San Francisco

**Public Transportation**

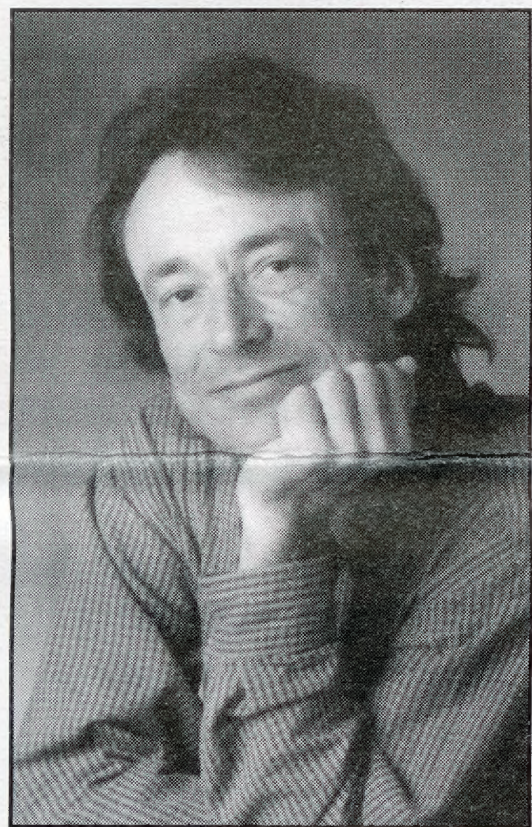
BART & MUNI – disembark at the Powell Street Station. Exit to 4th and Market Streets. Head northeast on 4th Street for two blocks. Turn left on Howard Street.

**Parking is available at the following locations:**

- The 5th and Mission Garage, on Mission Street between 4th and 5th Streets.
- The Moscone Garage, on 3rd Street between Howard and Folsom Streets.

## July Members' Lecture *Ishi's Brain: In Search of America's Last "Wild" Indian*

Orin Starn, Ph.D., Professor of Cultural Anthropology,  
Duke University



Orin Starn, Ph.D., author of *Ishi's Brain*

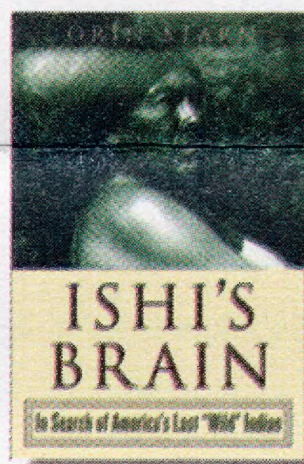
When Ishi, the last stone-age Indian, stumbled into a camp in Northern California in 1911, he set off an anthropological gold rush that would reverberate to the present day. Taken to San Francisco by renowned U.C. Berkeley anthropologist Alfred Kroeber, Ishi – the

last known member of the Yahi tribe – became an instant celebrity, a front-page story for the journalists of the era who were eager to build up the myth of an "uncivilized redskin" having little contact with modern society.

In the name of science, Ishi was autopsied after his death, against the wishes of Kroeber, and was thought

to have been cremated. But a rumor circulated among the Indians around Oroville that the "Wild Man of Deer Creek's" brain was never cremated, and had instead become a "gruesome trophy of white science, pickled in formaldehyde and still shelved somewhere in a laboratory."

Orin Starn, Ph.D., a professor of cultural anthropology at Duke University, delves into the mystery of what happened to Ishi's brain and why, and follows a determined group of Indians, possibly descended from the Yahi, as they fight Washington bureaucracy in the effort to reunite Ishi's remains and give him a proper, ritual burial. In the process, Starn divulges a strikingly honest portrait of the man and the era that is balanced, nuanced, and insightful. **Booksigning to follow the lecture.**



**Monday, July 26, 2 & 7:30 pm**

**Zeum Theater; Free to members,**

**\$4 Zeum members, \$8 non-members**

**Tickets can be purchased on page 4, by calling (415) 321-8000, or at the door, when available.**

## Conversations at the Herbst Theatre

Presented by City Arts & Lectures, Inc.

The Annual Claire Matzger Lilienthal Distinguished Lecturer

**Julie L. Gerberding, M.D., M.P.H.**

Director, Centers for Disease Control and Prevention  
In conversation with Paul Volberding, M.D.

As the director of the nation's Centers for Disease Control and Prevention, Julie L. Gerberding, M.D., is arguably one of the most important doctors in the country. During her tenure at the CDC, she has had to address a number of critical medical issues, including SARS and the West Nile Virus. Previously, Gerberding was Acting Deputy Director of National Center for Infectious Diseases, where she played a major role in leading CDC's response to the anthrax bioterrorism events of 2001. Since 1998, she has developed patient safety initiatives, among other programs, to prevent infections, antimicrobial resistance, and medical errors in healthcare settings. Gerberding continues a yearly tradition of working at San Francisco General Hospital for two weeks to stay connected with the delivery of medical services.

**Wednesday, June 2, 8 pm**

**Herbst Theatre; \$16 members, \$18 non-members**

**To order tickets, please call City Box Office at (415) 392-4400 or visit [www.cityboxoffice.com](http://www.cityboxoffice.com). California Academy of Sciences does not process ticket orders for these lectures.**

## Teacher & Adult Workshops

### Science in the City

**Workshop for Teachers (Grades 2–8)**

California Academy of Sciences, San Francisco Zoo, and Strybing Arboretum & Botanical Gardens are collaborating on a weeklong workshop for teachers. The workshop will explore the resources of these three informal science centers. Teachers will use hands-on explorations, sketching, and active observation to discover more about the workings of the natural world and how to integrate activities and resources in the classroom.

**June 14–18; Monday 9:30 am–Friday 3:30 pm; \$250**



PHOTO: LORIE TOPINKA

### Trinity Alps Programs

Summer camp isn't just for kids. Spend three relaxing days at the Academy's property near Big Flat Campground (elevation 5,000 feet) in the heart of the Trinity Alps, three hours northwest of Redding. Learn how to use sketching and journal-keeping to record the beauty and rich diversity of this wilderness area. Watch as coyotes and black-tailed deer wander into the brilliant wildflower meadow at the camp. Explore a high elevation, serpentine fen with hundreds of pitcher plants and record the brilliant chartreuse of their hood-like leaves in watercolor. Identify and sketch the vernal pool flowers of Big Flat Meadow where the massed bloom of *Downingia yina* looks like a lavender mirage.

The Academy is offering two workshops (see right) in the Trinity Alps near Coffee Creek.

**i** Contact Lorie Topinka by calling (415) 321-8000 or e-mail [ltopinka@calacademy.org](mailto:ltopinka@calacademy.org) for information. Information can also be found at [www.calacademy.org/education](http://www.calacademy.org/education) under Teacher Services.

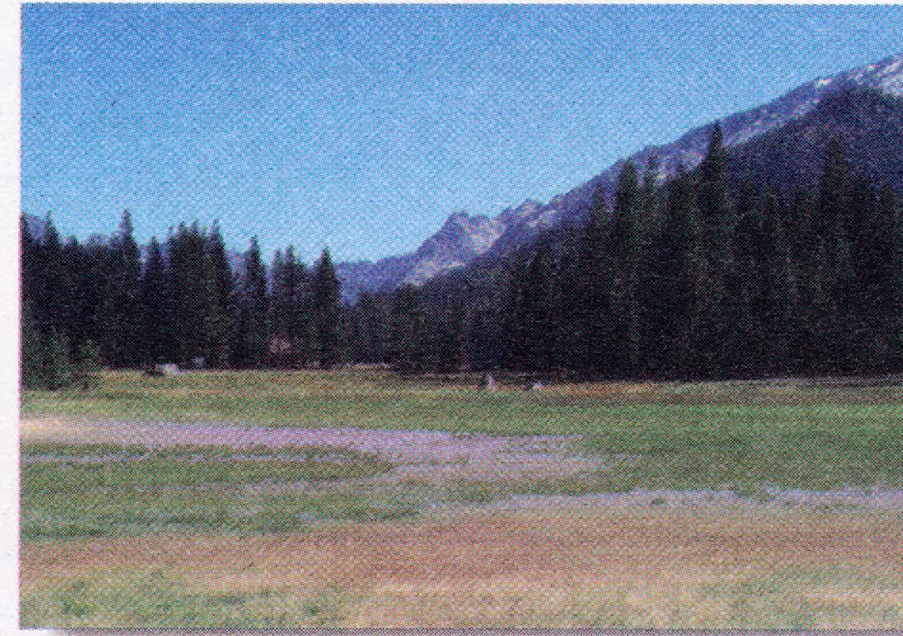


PHOTO: LORIE TOPINKA

### Nature Journaling Workshop in the Trinity Alps Workshop for Adults

**July 15–18, 2004**

**(Arrive Thursday 6 pm, depart Sunday 2 pm)**

**\$175 members, \$200 non-members**

### The Trinity Alps: Natural History, Exploration, and Sketching – Workshop for Teachers (Grades 3–12)

**July 19–22, 2004**

**(Arrive Monday 6 pm, depart Thursday 2 pm)**

**\$175 members, \$200 non-members**



# 4 JUNE

All programs take place at the Academy at 875 Howard Street unless otherwise noted. Nature Nest, Naturalist Center, and the Academy Classroom are located on the second floor of 875 Howard Street. All programs are free unless otherwise noted. Non-members must pay museum admission.

## 2 Wednesday

### Conversations at the Herbst Theatre

Featuring Julie L. Gerberding, M.D., M.P.H. See page 3 for details. To order tickets, call City Box Office at (415) 392-4400 or visit [www.cityboxoffice.com](http://www.cityboxoffice.com). 8 pm; \$16 members, \$18 non-members; Herbst Theatre, 401 Van Ness Avenue, San Francisco.

## 5 Saturday

### Story Time

Children ages 3–7 are encouraged to join us for Story Time every Saturday morning. This month's stories will focus on insects. 10:30 am; Nature Nest.

### Book Talk and Swap for Teachers

Teachers are encouraged to drop by the Naturalist Center and talk about curriculum and other reading books focused on insects. Bibliographies of applicable holdings will be provided and books will be available for check-out to Academy members. 2–3 pm; Naturalist Center.

## 6 Sunday

### Nature Trips for Children

Susan Edwards, founder of the child-focused Explorer's Club in San Francisco, will give a slide lecture on the best nature trips for kids in and around San Francisco. Explore the world with a child's sense of wonder and adventure. 1 pm; Naturalist Center.

## 7 Monday

### Mars Exploration Rover Science

Benjamin Dean lecture with Joy Crisp, Ph.D. See page 3 for information. To order tickets, call (415) 321-8000. Tickets also sold at the door, when available. 7:30–9 pm; \$3; JCCSF, 3200 California Street, San Francisco.

## 9 Wednesday

### Scientific Illustration

Meet a scientific illustrator and experience a live demonstration of drawings used for scientific publications and research. 3–3:30 pm; Naturalist Center.

## 12 Saturday

### Birdwatching for Kids

Search for birds in Golden Gate Park, and learn about what to look and listen for when identifying birds in the field. Wear warm, layered clothing and walking shoes, and bring binoculars and water. Ages 8 and up. Reservations required; space limited. 9–10:30 am; (415) 321-8000; Meet at the corner of Middle Drive Road and 9th Avenue in Golden Gate Park. Rain cancels program.

### Story Time

See June 5 for details. 10:30 am; Nature Nest.

### Introduction to the Bay Area Ant Survey

Meet with Academy scientists and learn how to participate in this unique scientific study. Limited to first 20 participants. 1 pm; Naturalist Center.

### Book Talk and Swap for Visitors

Visitors are encouraged to drop in to the Naturalist Center and talk about general reading books focused on insects. Bibliographies of applicable holdings will be provided and books will be available for check-out to Academy members. 2–3 pm; Naturalist Center.

## 14 Monday

### Science In The City

Pre-registration required for this workshop for teachers. See page 3 for information. Continues through June 18. Monday 9:30 am–Friday 3:30 pm; \$250.

### Acquiring the New Aquarium

Members' lecture with Tom Tucker, Curator of Steinhart Aquarium. See page 3 for information. To order tickets, call (415) 321-8000. Tickets also sold at the door, when available. 2 & 7:30 pm; Free to members, \$4 Zeum members, \$8 non-members; Zeum Theater, 221 4th Street, San Francisco.

## 16 Wednesday

### Lunch Break Series: Whales Near San Francisco

Discover the diversity of whale species found a few miles from San Francisco during the summer in an exciting, entertaining slideshow. 12:30–1 pm; Academy Classroom.

## 23 Wednesday

### Scientific Illustration

See June 9 for details. 3–3:30 pm; Naturalist Center.

## 26 Saturday

### Story Time

See June 5 for details. 10:30 am; Nature Nest.

### Book Talk and Swap for Visitors

See June 12 for details. 2–3 pm; Naturalist Center.

## 27 Sunday

### Family Discovery Hike

Take a walk around Golden Gate Park and look for hawks, turtles, millipedes, dragonflies, and more. Wear warm, layered clothing and walking shoes, and bring binoculars and water. Ages 8 and up. Reservations required; space limited. 9–10:30 am; (415) 321-8000; Meet at the corner of Middle Drive Road and 9th Avenue in Golden Gate Park. Rain cancels program.

## 30 Wednesday

### Introduction to the Bay Area Ant Survey

See June 12 for details. 10:30 am & 4 pm; Naturalist Center.

## Grand Opening Saturday, June 19 & Sunday, June 20

### March with Howard the Gi-ANT

Join Howard, a huggable costumed ant, as he leads a Welcoming Committee on a mini-march from Yerba Buena Gardens to 875 Howard Street. As a member of the Welcoming Committee, you'll receive fun party favors and the chance to hang out with Howard the Gi-ANT. Reservations required by Wednesday, June 16 – call (415) 321-8122. 10 am Saturday only; Call for reservations and meeting place.

### Festive Face Painting

Want to look like you have been to the big event? Visitors will have the opportunity to have their faces painted. 10 am–2 pm Saturday & Sunday.

### Army Ant Feedings

These ferocious little critters don't mess around at feeding time! Get a close-up view of their eating behavior when the live crickets arrive. Time to be announced Saturday & Sunday; ANTS exhibit.

### Bay Area Birds

Come visit with Academy Naturalist, Juan-Carlos Solis and his intriguing display of Bay Area bird specimens. 10 am–12 pm Saturday & Sunday; Academy Classroom.

### Meet and Greet with Howard the Gi-ANT

Shake hands, slap a high five, blow a kiss, or take a photo with Howard the Gi-ANT. Saturday & Sunday.

### Arthropod World

Meet live giant African millipedes, thorny phasmids, whip scorpions and more while exploring the amazing world of arthropods. 2 & 3:30 pm Saturday only; Academy Classroom.

### Book Talk and Swap for Children

Visitors are encouraged to drop in to the Naturalist Center and talk about children's books focused on insects. Bibliographies of applicable holdings will be provided and books will be available for check-out to Academy members. 2–3 pm Saturday only; Naturalist Center.

### Touch Tidepool

Explore a California tidepool with Academy interns. Touch your favorite live animals in the newly-designed Touch Tidepool. 10 am–5 pm Saturday & Sunday; Steinhart Aquarium.

### Highlight Tours

Docent tours that explore our new aquarium and two new exhibits, ANTS and Astrobiology. 10:15 & 11:15 am Saturday & Sunday.

### Children's Story Time

Stories highlighting insects. For children ages 3–7. 10:30 am Saturday & Sunday; Nature Nest.

### Introduction to the Bay Area Ant Survey

Meet with Academy scientists and learn how to participate in this unique scientific study. 12:30 & 2:30 Saturday & Sunday; Naturalist Center.

### Making Comets

Using dry ice, Academy docents will discuss what comets are made of, their orbits, and how we are able to see them. This demo steams, bubbles, and gurgles in simulation of what we think a comet might do. 2 pm Saturday & Sunday; Astrobiology exhibit.

### DNA Extraction

Watch and learn as interns spin vegetables to reveal their DNA and discuss the code of life. Visitors will learn about the importance and relevance of studying genes. 3 pm Saturday & Sunday; Astrobiology exhibit.

### Orientation to the Naturalist Center

Open for drop-in orientation. Stop in to say hello and check out the wonderful resources available. 10 am–5 pm Saturday & Sunday; Naturalist Center.

### Bats Alive!

Come in close contact with live bats and explore their wild side as Patricia Winters, a.k.a. "Bat Ma'am" shares information about their intriguing habits and conservation. 2 & 3:30 pm Sunday only; Academy Classroom.



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## 3 Saturday

### Story Time

Children ages 3–7 are encouraged to join us for Story Time. This month's stories will focus on flowering plants. *10:30 am; Nature Nest.*

### Skull Detectives

Dissect owl pellets with Academy scientists. Learn how to use scientific keys to identify skulls, compare your bones with native herbivores, and prepare your own specimens to take home. *12:30–2:30 pm; Naturalist Center.*

### Book Talk and Swap for Teachers

Teachers are encouraged to drop by the Naturalist Center and talk about curriculum and other reading books focused on flowering plants. Bibliographies of applicable holdings will be provided and books will be available for check-out to Academy members. *3–4 pm; Naturalist Center.*

## 10 Saturday

### Birdwatching for Kids

Search for birds in Golden Gate Park, and learn what to look and listen for when identifying birds in the field. Wear warm, layered clothing and walking shoes, and bring binoculars and water. Ages 8 and up. Reservations required; space limited. *9–10:30 am; (415) 321-8000; Meet at the corner of Middle Drive Road and 9th Avenue in Golden Gate Park. Rain cancels program.*

### Story Time

See July 3 for details. *10:30 am; Nature Nest.*

### Introduction to the Bay Area Ant Survey

Meet with Academy scientists and learn how to participate in this unique scientific study. Limited to first 20 participants. *1 pm; Naturalist Center.*

### Book Talk and Swap for Visitors

Visitors are encouraged to drop by the Naturalist Center and talk about general reading books focused on flowering plants. Bibliographies of applicable holdings will be provided and books will be available for check-out to Academy members. *2–3 pm; Naturalist Center.*

#### MEMBER INFORMATION

The Academy is open at 875 Howard Street between 4th and 5th Streets in downtown San Francisco. (Directions and transit information on page 8.)

Open 365 days a year. Hours every day: 10 am–5 pm

Information Hotline: (415) 321-8000  
Web site: [www.calacademy.org](http://www.calacademy.org)  
E-mail: [info@calacademy.org](mailto:info@calacademy.org)

# Academy

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## 14 Wednesday

### Introduction to the Bay Area Ant Survey

See July 10 for details. *10:30 am & 4 pm; Naturalist Center.*

### Scientific Illustration

Meet a scientific illustrator and experience a live demonstration of drawings used for scientific publications and research. *3–3:30 pm; Naturalist Center.*

## 15 Thursday

### Nature Journaling Workshop in the Trinity Alps

Pre-registration required for this workshop for adults. See page 3 for information. Continues through July 18. *Thursday 6 pm–Sunday 2 pm; \$175 members, \$200 non-members.*

## 17 Saturday

### Story Time

See July 3 for details. *10:30 am; Nature Nest.*

### Bird Beak Buffet

Participate in an educational demonstration and explore adaptations for feeding in birds. Study and compare various bird specimens as Naturalist Center staff and interns teach visitors about bill variation in these feathered friends. *11 am & 3 pm; Naturalist Center.*

### Book Talk and Swap for Children

Visitors are encouraged to drop by the Naturalist Center and talk about children's books focused on flowering plants. Bibliographies of applicable holdings will be provided and books will be available for check-out to Academy members. *2–3 pm; Naturalist Center.*

## 19 Monday

### The Trinity Alps: Natural History, Exploration, and Sketching

Pre-registration required for this workshop for teachers. See page 3 for information. Continues through July 22. *Monday 6 pm–Thursday 2 pm; \$175 members, \$200 non-members.*

## 21 Wednesday

### Lunch Break Series: California Seabirds

Explore the amazing diversity of bird life in the offshore waters of California during the summer in an exciting, entertaining slideshow. *12:30–1 pm; Academy Classroom.*

## 24 Saturday

### Story Time

See July 3 for details. *10:30 am; Nature Nest.*

### Introduction to the Bay Area Ant Survey

See July 10 for details. *1 pm; Naturalist Center.*

### Book Talk and Swap for Visitors

See July 10 for details. *2–3 pm; Naturalist Center.*

## 25 Sunday

### Family Discovery Hike

Take a walk around Golden Gate Park and look for hawks, turtles, millipedes, and more. Wear warm, layered clothing and walking shoes, and bring binoculars and water. Ages 8 and up. Reservations required; space limited. *9–10:30 am; (415) 321-8000; Meet at the corner of Middle Drive Road and 9th Avenue in Golden Gate Park. Rain cancels program.*

## 26 Monday

### Tidepool Creatures

Discover the wonders of tidepools. See page 2 for information. Pre-registration required. *8:30 am–noon; (415) 321-8000; \$35 members, \$45 non-members.*

### Ishi's Brain: In Search of the Last "Wild" Indian

Members' lecture with Orin Starn, Ph.D. See page 3 for information. To order tickets, call (415) 321-8000. Tickets also sold at the door, when available. *2 & 7:30 pm; Free to members, \$4 Zeum members, \$8 non-members; Zeum Theater, 221 4th Street, San Francisco.*

## 27 Tuesday

### Herptacular

Explore the amazing world of amphibians and reptiles. See page 2 for information. Pre-registration required. *8:30 am–noon; (415) 321-8000; \$35 members, \$45 non-members.*

## 28 Wednesday

### Arthropods Alive

Discover similarities and differences between arthropods, such as butterflies, lobsters, and spiders. See page 2 for information. Pre-registration required. *8:30 am–noon; (415) 321-8000; \$35 members, \$45 non-members.*

### Introduction to the Bay Area Ant Survey

See July 10 for details. *10:30 am & 4 pm; Naturalist Center.*

### Scientific Illustration

See July 14 for details. *3–3:30 pm; Naturalist Center.*

## 29 Thursday

### Birdmania

See what makes birds so special. See page 2 for information. Pre-registration required. *8:30 am–noon; (415) 321-8000; \$35 members, \$45 non-members.*

## 31 Saturday

### Story Time

See July 3 for details. *10:30 am; Nature Nest.*

### Skull Detectives

See July 3 for details. *12:30–2:30 pm; Naturalist Center.*

### Book Talk and Swap for Visitors

See July 10 for details. *2–3 pm; Naturalist Center.*

### Thirteenth Annual Summer Gala

ANTicipation. See page 7 for information. *8:30 pm–12:30 am; \$110 for members, \$125 for non-members; Regency Building, 1290 Sutter Street, San Francisco.*

## Sign up for Academy Bytes . . .

Want the latest information about 875 Howard Street? Need reminders for upcoming events like classes, lectures, and field trips? Get this and more in a monthly e-newsletter all about Academy events. Send an e-mail to [info@calacademy.org](mailto:info@calacademy.org) with "Academy Bytes" in the subject line.

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# Steinhart Adjusting to Howard Street

As the staff adjusts to the Academy's new location at 875 Howard Street, Steinhart Aquarium animals are slowly being acclimated to their new water systems. This phase of the move is critical to their well-being. Most of the fish and reptiles have already settled into new homes that were designed by the Academy's devoted staff. However, the high-maintenance corals and penguins are taking longer to make their appearance in "state-of-the-art" water systems, designed by life support engineers.



PHOTO: TOM TUCKER

Aaron Hopkins, Steinhart Aquarium chemist

It is at this time that curators and biologists rely on and appreciate the devotion of the laboratory chemist. The water in the aquarium tanks is being tested continually for organic waste, inorganic pollutants, and other conditions that are detrimental to the critters. The biologists are monitoring the animals for signs of stress, such as rapid respiration and color changes, as well as signs of aggression by tank mates, including torn fins and unnatural postures. They are also closely observing the animals' feeding responses.

As nitrifying bacteria build up in the filters and bioreactors, the tanks will be able to handle increased waste from introduced animals. Slowly, they will be filled with Steinhart animals. The last animals to be introduced will be the endangered species (Beluga sturgeon, hard corals, and Chinese giant salamander) and threatened species (Australian lungfish and Asian arowana). Be sure to visit the Academy often to see how the animals are adjusting to their new home.

— Tom Tucker, Aquarium Curator

## Academy Travel 2005

**NEW ZEALAND BY LAND AND SEA**  
**January 25–February 7, 2005**  
Aboard the *Clipper Odyssey*  
With Charles Griswold, Ph.D.

The natural world of New Zealand will be seen at its best at ports in the North and South Islands. Spend two full days cruising amidst the spectacular beauty of Fiordland National Park's Dusky, Doubtful, and



Milford Sounds. The *Odyssey* is perfect for exploring New Zealand's natural wonders, offering

comfort, style and a maneuverable fleet of Zodiacs that allow for up-close observation of the flora and fauna of this unspoiled region.

In an itinerary that offers a variety of insights into New Zealand, you will learn about Maori culture, visit geothermal pools, explore museums, observe rare royal albatross and yellow-eyed penguins in their natural habitats, and look for frolicking bottlenose and dusky dolphins as they surf the bow waves.

**Cost: \$6,990 to \$10,290 per person (based on double occupancy) plus airfare.**



The Asa Wright Nature Center, tucked in a verdant valley at 1,200 feet, is one of the world's great birding lodges. Nestled in avian richness, the lodge is renowned for its gorgeous tropical setting and delicious cuisine. The lodge is a convenient base from which to explore the surrounding habitats including swamps, freshwater and saltwater marshes, lowland and montane rainforests, and savannas. Trinidad's plant and bird populations mirror (in microcosm) the rest of the South American continent.

Tobago offers an interesting contrast to Trinidad. The vegetation ranges from Norfolk pines to mangrove swamps, and includes bamboo forests, strangler figs, and a variety of exotic fruit trees. Beautiful coral

formations and tropical reef fish lay await just outside the beachfront accommodations.

**Cost: \$4,195 per person (based on double occupancy) plus airfare.**



**i** For brochures or further information, please contact the Academy Travel Office at (800) 853-9372 or (650) 365-6244, or e-mail [calacademy@hcaptravel.com](mailto:calacademy@hcaptravel.com).

### Membership News: Reciprocal Membership Program Updates

Starting May 1, 2004, these four science centers and museums have been added to the list of free reciprocal memberships:

- Hall of Health (Berkeley, California)
- Lake County Discovery Museum (Wauconda, Illinois)
- National Science Centre (Kuala Lumpur, Malaysia)
- Pacific Science Center (Seattle, Washington)

These four sites will no longer participate in the program, effective May 1, 2004:

- Brevard Museum of History & Science (Cocoa, Florida)
- Houston Museum of Natural Science (Houston, Texas)
- The Maritime Aquarium (Norwalk, Connecticut)
- Michigan Space and Science Center (Jackson, Michigan)

**i** Obtain a current copy of the reciprocal list at [www.calacademy.org/membership](http://www.calacademy.org/membership).

### Volunteer Profile

## A New Career in the Making

"The Academy sent me back to school," says Dawn LoBaugh when asked about her two-year volunteer experience at Steinhart Aquarium. In high school, LoBaugh dreamed of pursuing an interest in animal communication, but she was side-tracked into a business degree and a career as a facilities engineer. After she joined the team of volunteers at Steinhart Aquarium, her dream resurfaced.

A dive training class and the thought that she could get "more water time" lead her to Steinhart's biologist, Pamela Schaller. Pleased to help out even though she was a "newbie," LoBaugh immediately took to her responsibilities – cleaning the tanks, feeding anemones "from the top," and placing food in the "underarms" of sea stars. But the real thrill was the chance to hone her observational skills of animals in close quarters.

"My job is to see not only that the animals look healthy, but also to be mindful of the 'other side' of the tank, the display side. I'm constantly rearranging the backdrop, placing plants and exhibit materials to look natural in order to create a pleasing biological composition." The octopus, a focus for many visitors, is also a favorite of LoBaugh. "A loner, the octopus is inquisitive and low-key, but changes color with its moods and has no compunctions about pushing me away with its beak. It's forever fascinating."



PHOTO: DONG LIN

Dawn LoBaugh has found a new career working with the penguins at Steinhart Aquarium.

LoBaugh is also involved with a penguin study, one of a series, which will take place to observe behavioral changes during the transition from Golden Gate Park to Howard Street. To save time and increase efficiency, Steinhart biologists are trying to get the penguins to weigh themselves by conditioning them to walk over a metal square. Weight maintenance is an important indicator of health and needs to be done regularly. LoBaugh is curious whether behaviors will change in the new space where there is more water. She hopes to see more of the water play she has observed with one of the penguins who is "very funny and has an affinity for the bubble water where he bobs, rolls, dives, and plays with his food."

Now a fulltime student in biology, LoBaugh is inspired by the professional staff at the Academy, and the generous mentoring opportunities. Once graduate studies are complete, a research career in wetlands conservation and rehabilitation beckons.

Overall, the Academy has provided a life-changing experience for LoBaugh who started with the modest plan to "get over her fear of diving with other things moving around."

— Rosalind Henning,  
Manager of Volunteer Services

**i** If you are interested in participating in the penguin observational study, please call (415) 321-8111.



# Can You Feel The ANTicipation?

## Thirteenth Annual Summer Gala

Tunnel down to ANTicipation, the California Academy of Sciences' Thirteenth Annual Summer Gala on Saturday, July 31, to be held at the Regency Building, 1290 Sutter Street in San Francisco. The theme of this year's gala is inspired by our new exhibit at 875 Howard Street, *ANTS: Hidden Worlds Revealed*. This is the first year that the gala will be held outside of Golden Gate Park. Co-chairs for one of this summer's wildest events are Dan Clifford, Shelley Dickerson, and Christina Lynch, who are bringing their excitement and great ideas to this festive affair. Cocktails, hors d'oeuvres, music, and antennae-pulling fun is sure to be in store. Tickets are \$125 for non-members and \$110 for members. For more information, call Anne Rianda, the queen of the colony, at (415) 321-8148 or [arianda@calacademy.org](mailto:arianda@calacademy.org).



Disco doyennes from last year's Summer Gala: (from left to right) Alix Mayer, Megan Fung, Renato Iwerson, Christine Chesson.

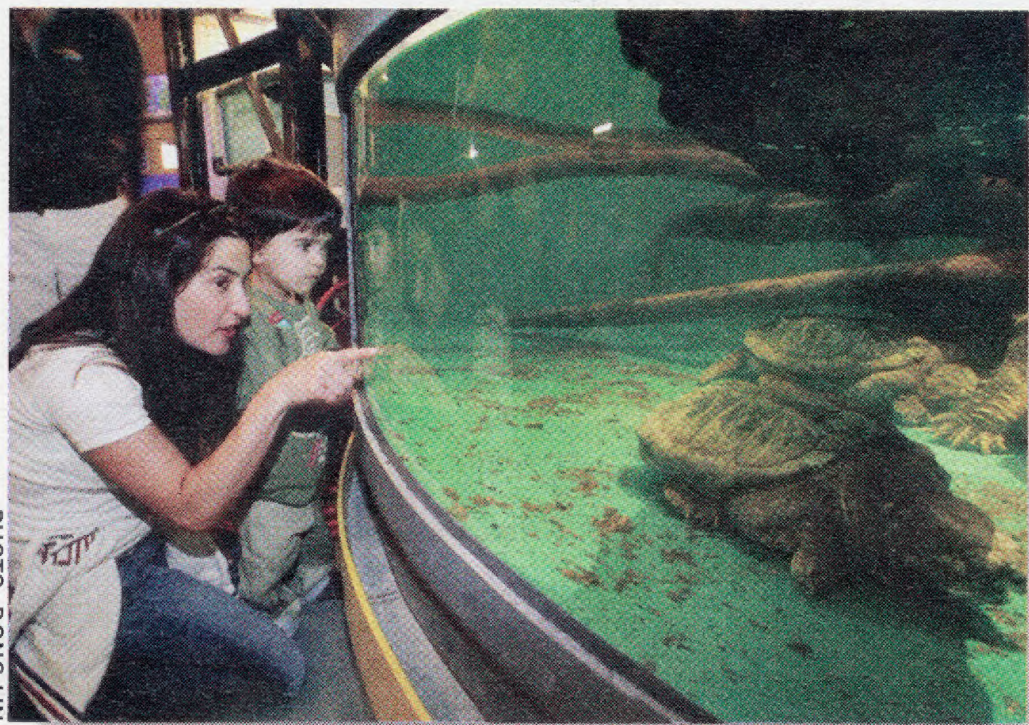
PHOTO: DONG LIN

## Corporate and Foundation Support

The Academy wishes to thank the following corporations and foundations for their generous support over the last few months: the **Ayrshire Foundation**, \$75,000 for Careers in Science; the **Koret Foundation**, \$40,000 for Careers in Science over two years; the **Patricia Price Peterson Foundation**, \$30,000 for Teacher Services; the **Richard and Rhoda Goldman Fund**, \$10,000 for the 15th Annual Conversations at the Herbst Theatre and \$10,000 for general operating support; \$15,000 from the **Compton Foundation** to support the SF Bay 2K Biodiversity Survey; **Ann and Gordon Getty Foundation**, \$10,000 for general operations; the **Joseph R. McMicking Foundation**, \$5,000 for K-12 Education; \$1,000 from the **Sage Foundation**; \$5,000 from the **Bodri Foundation of the Jewish Community Endowment Fund** in memory of **Thomas Tilton**; and \$1,000 from the **Will and Julie Parish Fund of the Tides Foundation**.

In addition, **Brightroom, Inc.** and **Arthur Court Design** are welcomed as new Corporate Partners.

## Members' Preview Days at Howard Street



As part of the Academy's "sneak peak" events at 875 Howard Street, over 2,500 members enjoyed the new exhibit *ANTS: Hidden Worlds Revealed*, and other exciting exhibits during two special Members' Preview Days.

Preview events, special discounts, and other activities are among the special benefits enjoyed by Academy members. In addition to these rewards, members know they help the Academy with its mission to explore, explain, and protect the natural world.

The Academy gratefully acknowledges the support of **Webcor Builders**, the sponsor for Members' Preview Days.

PHOTO: DONG LIN

## Friends Appreciation Dinner

The annual Friends Appreciation Dinner was held on March 10, 2004 at the Old Federal Reserve Building as a special opportunity to honor and recognize the Friends of the Academy. Over 300 of the Academy's closest supporters enjoyed a special evening including a presentation by Brian Fisher, Ph.D., Academy Entomologist and Curator of *ANTS: Hidden Worlds Revealed*.

Friends of the Academy contribute annual gifts of \$1,000 and above in unrestricted support to the Academy. This exceptional group of supporters contributes well over one million dollars to the institution each year, helping to ensure the Academy's growth as a world-class natural history museum and Bay Area treasure.

**i** For more information on becoming a Friend of the Academy, please contact Patricia Ivancich at (415) 321-8404 or [pivancich@calacademy.org](mailto:pivancich@calacademy.org).



PHOTO: DONG LIN

### Friends of the Academy

January and February 2004:  
Gifts of \$1,000 and above to the Annual Fund

Anonymous  
Mr. and Mrs. Peter Avenali  
Ms. Joan L. Beavin  
Ms. Karen K. Christensen  
Mr. and Mrs. F. T. Elliott, Jr.  
Marion and Jack Euphrat  
Mr. and Mrs. Jeffrey M. Faraday  
Randi and Bob Fisher  
Mr. Don H. Holcomb  
Mrs. Katharine H. Johnson  
Stanley H. Judd  
Mr. and Mrs. James M. Koshland  
Linda and John Larson  
Laura and Michael Lazarus  
Mr. Thomas N. Lippman  
Mr. E.W. Littlefield and Ms. Julia Derby  
Mr. James J. Ludwig  
Mr. and Mrs. Hamid Moghadam  
Mr. and Mrs. William P. Parish  
Arno and Carol Rayner

### New Donor Circle Members

January and February 2004: \$125 to \$999

Many thanks to the following new donors and those who have increased their support of the Academy recently.

Mr. Joe Brennan and Captain Jan Tiura  
Mr. and Mrs. Thomas Collins  
Mrs. Virginia Debs  
Mr. and Mrs. Frank Dowling  
Ms. Adrienne Hirt and Mr. Jeff Rodman  
Mr. and Mrs. John P. Hurabiell  
Mr. Jonathan Katz  
Mr. Morton Macks  
Mr. and Mrs. William C. McGee, Jr.  
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Ms. Carole J. Peterson and Mr. James Brice  
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Ms. Patricia M. Skala  
Mr. and Mrs. Alan R. Smith  
Mr. and Mrs. Stanley Smith  
Ms. Isabel Stirling  
Mr. Arne Wagner and Dr. Gail Wagner  
Mr. and Mrs. Henry C. Williams

## The Academy Is On The Move! Are You?

We have returned to downtown San Francisco to 875 Howard Street until the new Academy opens in Golden Gate Park in 2008. What about you? Are you thinking about moving? Is this a time for you to simplify your life?

If you want to sell your home or other real estate but are concerned about hefty taxes, there are ways to:

- Avoid capital gains tax,
- Increase your income,
- Save income tax,
- AND make a meaningful gift to the California Academy of Sciences.

**i** To learn how you can achieve your personal and financial goals while helping the Academy, please call Louise Gregory at (415) 321-8407 or e-mail [lgregory@calacademy.org](mailto:lgregory@calacademy.org) and ask for information on the benefits of giving real estate.



The Academy on Howard Street, 2004

PHOTO: DONG LIN



The Academy on Market Street, circa 1891

PHOTO: SPECIAL COLLECTIONS / CAS LIBRARY (N1350)



# Current Exhibits

## ANTS: Hidden Worlds Revealed

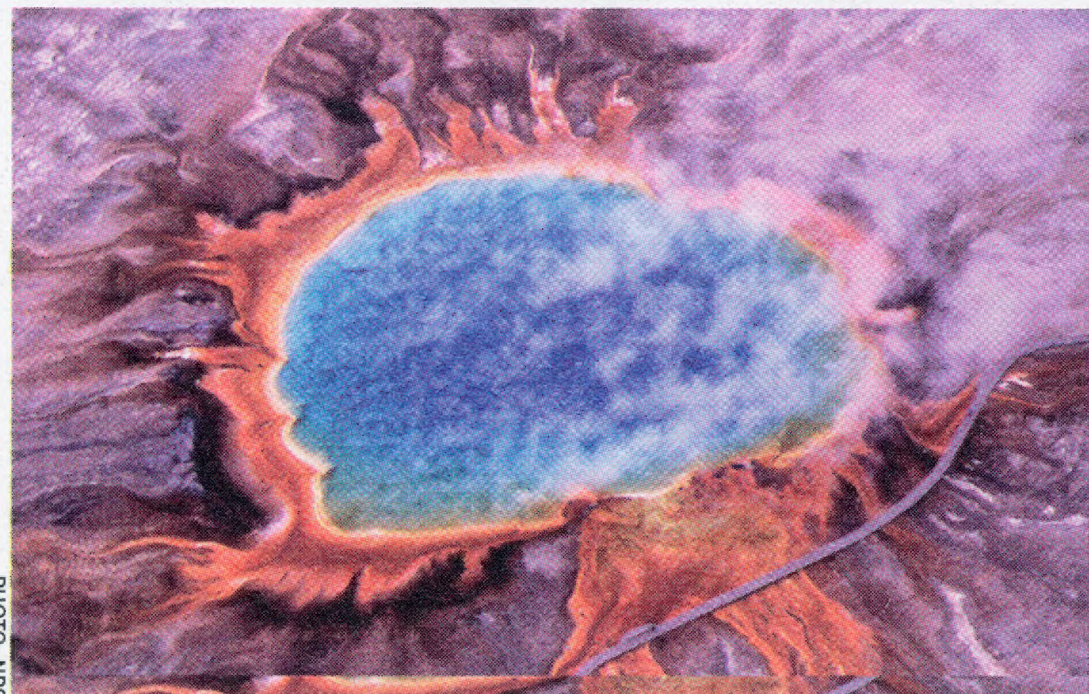
Curated by Academy scientists, *ANTS: Hidden Worlds Revealed* showcases six live colonies of ants, each of which displays unique nest building and food collecting behaviors. In this innovative exhibit, visitors can watch as Leaf Cutter ants grow a garden of fungus, Honey Pot ants turn their bodies into living refrigerators, and Army ants march across a bed of sand to prey on live crickets. Carpenter ants, Harvester



Young visitors taking a peek into the Leaf Cutter ants' nest.

ants, and invasive Argentine ants will also show off their exceptional adaptations in the exhibit. Those who are inspired will be able to participate in an Academy research project, the Bay Area Ant Survey, designed to document the biodiversity of ants in the Bay Area.

## Astrobiology: Life in the Extreme



Hot springs such as this host a wide variety of life forms and help guide our search for life in other extreme environments on Earth and beyond.

supporting life beyond our own planet, astrobiologists must study the limits of life here on Earth. They do this by researching extreme environments, such as thermal springs and hydrothermal vents (geysers on the ocean floor), that host hardly living organisms. Curated by Academy scientists, *Astrobiology: Life in the Extreme* explores both of these types of extreme habitats, drawing parallels between Earth's extreme environments and those on other planets and moons.

On the second floor, the Academy will give visitors an introduction to an exciting new scientific discipline called astrobiology – the study of life in the Universe. To identify the types of environments that would be capable of

# Howard “Sez”

## Top Ten Reasons to Visit the Academy on Howard Street

### 10 Location, location, location!

While we all love Golden Gate Park (and are looking forward to returning), we love the advantages of our new location. I like to soak up the sun in the Yerba Buena Gardens, show off my strength at the bowling alley there, and go shopping in Union Square.

### 9 Transit hub

From wherever your trip originates, you have options galore. MUNI, BART, CalTrain, and even ferries will get you here. If you drive, you can find reasonable parking in nearby garages. (See directions below.)

### 8 Ants

Seven kinds counting me: Leaf Cutter, Army, Carpenter, Honey Pot, Harvester, invasive Argentine ants and me, the Gi-ANT! You will see these six species on every visit, but I am a little shy, making occasional appearances.

### 7 Food

A subject very dear to me. Did you know that I can easily carry food many times my body weight away from your picnic? Check out our **Grow Cafe** (see page 2) with its wonderful selection of delicious and nutritious fare. Eat in or take it on a picnic.

### 6 Nature Nest

This young children's play space is designed for the toddling crowd. Visit this area for puppet shows, make-believe, Story Time, or splashing in the water table.

### 5 Fish

I have to admit, for creatures that don't have any legs at all (not even two), fish really rock! I wish ants came in neon colors or with outlandish patterns – it would be so much *fin*!

### 4 Steinhart Aquarium

– more than just fishes! Our SSsssnake Alley is just crawling with slithering creatures.



Howard the Gi-ANT can be spotted occasionally at the Academy's 875 Howard Street site.

### 3 Naturalist Center

Not only will you have access to books, videos, and computer resources, you will have access to actual animal specimens, the tools to study them, and expert advice. Come in to take part in our Bay Area Ant Survey! P.S. While I may be a Bay Area ant, I am too large for the collection containers – phew!

### 2 Aquatic Biologists

With our newly-designed “inside out” aquarium, you'll see a lot more of our aquatic biologists at work. They do all the things they've always done to keep our delicate creatures and habitats healthy, but now they're on the museum floor with you.

### 1 Ants Again!

(I tend to be passionate about this topic.) I think the number one reason for visiting the Academy is to watch our Army ants feeding! This incredible species will go to great lengths to get a meal (like making bridges out of their own bodies and transporting the entire nest with them to the food source). Did I mention they like their meals *live*?

## Finding Your Way to 875 Howard Street

### Driving Directions

#### 80 West

Take I-80 west to the Harrison Street exit. Continue straight past Harrison to Howard Street. Take a left at Howard Street. 875 Howard Street will be on your left, between 4th and 5th Streets.

#### 101 North

Take 101 north toward I-80 Bay Bridge/Oakland. Exit 7th Street. Turn left onto 7th Street, and then turn right onto Mission Street. Continue for three blocks. Take a right at 4th Street and take another right onto Howard Street. 875 Howard Street will be on your left, between 4th and 5th Streets.

#### 280 North

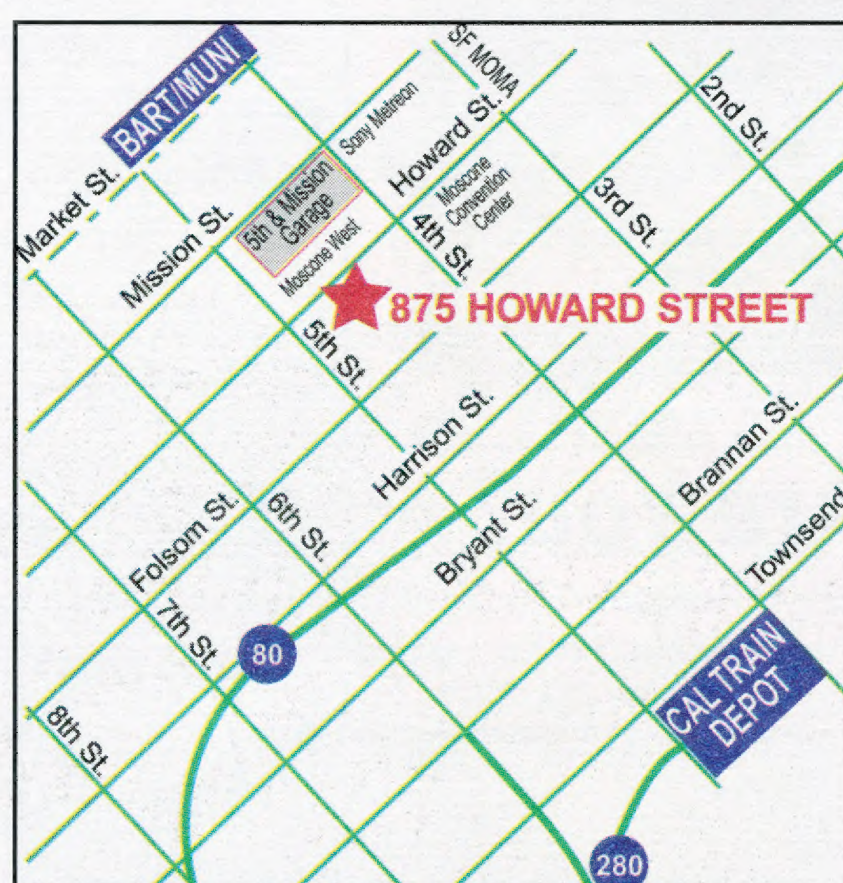
Take 280 north into San Francisco. Exit Sixth Street. Continue down Sixth Street to Mission Street. Turn right onto Mission Street and head down to 4th Street. Take a right at 4th and take another right onto Howard Street. 875 Howard Street will be on your left, between 4th and 5th Streets.

#### 101 South

Take the Golden Gate Bridge south into San Francisco. Exit on Lombard. Continue on Lombard. Turn right on Van Ness. Turn left onto O'Farrell. Turn Right onto Stockton. Stockton crosses Market Street and becomes 4th Street. Turn right onto Howard Street. 875 Howard Street will be on your left, between 4th and 5th Streets.

### PARKING

To continue to the 5th and Mission Garage, continue down Howard to 5th Street. Turn right. Turn right onto Mission and enter the garage midway down the block on your right. The 5th and Mission Garage is the largest parking garage in San Francisco with more than 2,500 parking spaces, and is conveniently located only a block from the Academy between 4th and 5th Streets on Mission. The fee is \$2.00 per hour, with a 1 hour minimum. The garage is open 24 hours a day, 7 days a week.



### Public Transportation

To visit via public transit, check out [www.transitinfo.org](http://www.transitinfo.org) for free trip planners and a comprehensive list of Bay Area public transit maps.

#### MUNI

Nineteen Muni lines drop off within three blocks of 875 Howard Street: 2, 3, 4, 5, 6, 7, 9, 9X, 12, 14, 14X, 16AX, 16BX, 21, 30, 31, 38, 38L, 45, 66, 71, F, J, K, L, M, N.

#### CABLE CARS

See directions below. Exit at Powell & Hyde or Powell & Mason.

#### BART

See directions below. Exit at the Powell Street Station.

**Directions from buses, historic street cars and cable cars that exit at Powell Street, and from the BART and Muni Powell Street Station: walk northeast on Market to 4th Street. Turn right onto 4th Street. Continue for two blocks. Turn right onto Howard Street. 875 Howard is on the left.**

#### AC TRANSIT

Twenty-two bus lines stop at the San Francisco Transbay Terminal. The Transbay Terminal is located between Fremont and First streets on Mission. From the Transbay Terminal, walk six blocks down Mission to 4th Street turn left, walk one block, turn right onto Howard Street. 875 Howard Street is on the left. B, C, CB, E, F, FS, G, H, L, LA, NL, NX, NX3, NX4, O, OX, P, S, SA, SB, V, W

#### GG TRANSIT

Eight Golden Gate Transit buses stop within two blocks of 875 Howard Street on Mission Street: 10, 20, 50, 60, 70, 80, 90, 93.

#### FERRY

The Larkspur, Sausalito, Tiburon, Oakland, Vallejo Baylink and Alameda ferries all drop passengers off at the Ferry Building at the end of Market Street and the Embarcadero. Visitors may ride BART or Muni to the Powell Street Station or walk twelve blocks to 875 Howard Street.

#### CALTRAIN

Caltrain runs between Gilroy and San Francisco. It is a public transit alternative to driving to 875 Howard Street from the Peninsula. There is at least one stop in every major city along the Peninsula. Conveniently, the San Francisco station is located six blocks from 875 Howard Street. From the 4th and King Street station, exit onto 4th Street. Turn right and continue on 4th Street for five blocks. Turn left onto Howard Street. 875 Howard Street is on the left.

#### SAMTRANS

SamTrans provides service from areas throughout San Mateo County to downtown San Francisco. Several buses travel to and from the Transbay terminal via Mission Street. Express buses are listed first: DX, FX, KX, MX, NX, PX, 391, 292